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EXAMINER
NGUYEN, DAVID Q

ART UNIT	PAPER NUMBER
2682	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/536,275	WANG, ARTHUR W.	
	Examiner	Art Unit	
	David Q Nguyen	2682	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 March 2000* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21,23 and 25-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *22 and 24* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

   I. Claims 1-21,23 and 25-31 drawn to satellites located in an elliptical sub-geostationary orbit with respect to the earth, classified in class 455, subclass 13.1.

   II. Claims 22,24, drawn to handing over operation from the first satellite to the second satellite, classified in class 455, subclass 13.3. It is noted that claim 24 depends on it self. The examiner believes that it should depend on claim 22. Therefore, claims 22 and 24 belongs to group II.

2. The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention I has separate utility such as improving the quality of service for a transmission of loss sensitive data. See MPEP § 806.05(d).

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Because these inventions are distinct for the reasons given above and the search required for Group II is not required for Group I, restriction for examination purposes as indicated is proper.

During a telephone conversation with Mrs. Vijayalakshmi D. Duraiswamy (Reg. No. 31505) on August 29, 2002 a provisional election was made with traverse to prosecute the

invention of group I, claims 1-21,23 and 25-31. Affirmation of this election must be made by applicant in replying to this Office action. Claims 22,24 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 26 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 26, "A method as recited in claim 26" on line 1 is indefinite. For purpose of examining, the examiner believes that claim 26 depends on claim 25. Correction is required.

1.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1,3,7 and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Castiel et al. (US Patent Number 5788187) in view of Barmat (US Patent Number 4689625) and further in view of Bradley et al. (US Patent Number 5805067).

Regarding claim 1, Castiel disclose a communications system comprising: a plurality of regional ground stations; a plurality of satellites located in a elliptical sub-geostationary orbit with respect to the earth, located in an elliptical sub-geostationary orbit with respect to the earth, said satellites operating in a service area in a synchronized manner to provide continuous coverage to said service area (see abstract; col. 9, lines 66-67; col. 10, lines 10-12). Castiel are silent to disclose said satellites generating a plurality of beams with variable beamwidth to obtain a substantially uniform cell size covering said service area; and a plurality of user terminals with the service area receiving communication signals from the satellite. However, Barmat discloses a communications system comprising satellites generating a plurality of beams with variable beamwidth to obtain a substantially uniform cell size covering said service area (see col. 4, lines 19-25) and Bradley disclose a plurality of user terminals with the service area receiving communication signals from the satellite (see fig. 1 and 2). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Bradley and Barmat to Castiel in order to avoid interference and allow for a reduction in satellite transponder requirements per unit of bandwidth employed.

Regarding claim 3, Castiel disclose a communications system modified by Barmat and Bradley comprising all of the limitations as claimed. Barmat also discloses that the uniform cells are substantially fixed within the service area (see fig. 2; col. 4, lines 54-67). Therefore, it would

have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Bradley and Barmat to Castiel in order to provide service to all the service area.

Regarding claim 7, Castiel disclose a communications system modified by Barmat and Bradley comprising all of the limitations as claimed. Barmat also discloses the plurality of satellites comprising a phase array to form said plurality of beams (see col. 4, lines 19-25). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Barmat to Castiel and Bradley in order to avoid interference and allow for a reduction in satellite transponder requirements per unit of bandwidth employed.

Regarding claim 9 and 10, Castiel disclose a communications system modified by Barmat and Bradley comprising all of the limitations as claimed. Barmat also discloses that the plurality comprises less than 9 satellites; and the plurality comprises 4 satellites (see col. 10, lines 10-12)

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Castiel et al. (US Patent Number 5788187) in view of Barmat (US Patent Number 4689625) and further in view of Bradley et al. (US Patent Number 5805067) in view of Byrne et al. (US Patent Number 5990883).

Regarding claim 2, Castiel disclose a communications system modified by Barmat and Bradley comprising all of the limitations as claimed. They are silent to disclose the ground station coupled to one selected from the group consisting of an internet service provider, a broadcast television center and a corporate internet. However, Bryne disclosse the ground station

coupled to one selected from the group consisting of an internet service provider, a broadcast television center and a corporate internet (see fig. 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Bryne to Barmat, Castiel and Bradley in order to provide multimedia program content to users.

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Castiel et al. (US Patent Number 5788187) in view of Barmat (US Patent Number 4689625) and further in view of Bradley et al. (US Patent Number 5805067) in view of Sarraf et al. (US Patent Number 6175719).

Regarding claim 4, Castiel disclose a communications system modified by Barmat and Bradley comprising all of the limitations as claimed. They are silent to disclose the plurality of beams providing equal capacity density to the cell size. However, Sarraf disclose the plurality of beams providing equal capacity density to the cell size (see col. 1, lines 26-31). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Sarraf to Barmat, Castiel and Bradley in order to accommodate design simplification and cost reductions as well as changes in user demand and market needs.

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Castiel et al. (US Patent Number 5788187) in view of Barmat (US Patent Number 4689625) and further in view of Bradley et al. (US Patent Number 5805067) in view of Horstein et al. (US Patent Number 5867783).

Regarding claim 5, Castiel disclose a communications system modified by Barmat and Bradley comprising all of the limitations as claimed. They are silent to disclose the minimum

elevation angle is greater than 10 degrees in the service area. However, Horstein disclose the minimum elevation angle is greater than 10 degrees in the service area (see col. 2, lines 30-32). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Horstein to Barmat, Castiel and Bradley so that a constellation of satellites provides complete global coverage of the earth.

8. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Castiel et al. (US Patent Number 5788187) in view of Barmat (US Patent Number 4689625) and further in view of Bradley et al. (US Patent Number 5805067) in view of Diekelman et al. (US Patent Number 6007027).

Regarding claim 6, Castiel disclose a communications system modified by Barmat and Bradley comprising all of the limitations as claimed. They are silent to disclose within said service area is a primary market area. However, Diekelman disclose within said service area is a primary market area (see col. 1, lines 57-65). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Diekelman to Barmat, Castiel and Bradley in order to provide service to the market area

9. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Castiel et al. (US Patent Number 5788187) in view of Barmat (US Patent Number 4689625) and further in view of Bradley et al. (US Patent Number 5805067) in view of Schloemer (US Patent Number RE37140).

Regarding claim 8, Castiel disclose a communications system modified by Barmat and Bradley comprising all of the limitations as claimed. They are silent to disclose the satellites are disabled when coextensive with a geostationary orbit. However, Schloemer discloses the

satellites are disabled when coextensive with a geostationary orbit (see col. 2, lines 45-50). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Schloemer to Barmat, Castiel and Bradley in order to keep satellites in their proper orbits.

10. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Castiel et al. (US Patent Number 5788187) in view of Barmat (US Patent Number 4689625) and further in view of Bradley et al. (US Patent Number 5805067) in view of Castiel et al. (US Patent Number 6263188).

Regarding claim 11, Castiel disclose a communications system modified by Barmat and Bradley comprising all of the limitations as claimed. They are silent to disclose the plurality comprising 5 satellites. However, Castiel et al. (US Patent Number 6263188) disclose the plurality comprising 5 satellites (see col. 13, lines 8-9). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Castiel et al. (US Patent Number 6263188) to Barmat, Castiel and Bradley in order to provide continuous coverage to the service area.

11. Claims 12-13,17 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horkin et al (US Patent Number 5619211) in view of Barmat (US Patent Number 4689625)

Regarding claim 12, Horkin disclose a communication system comprising a first plurality of satellites located in an elliptical subgeostationary orbit with respect to the earth, said satellites operating in a service area in a synchronized manner to provide continuous coverage to said service area; and a second plurality of satellites deployed after said first plurality of satellites, said second plurality of satellites providing a second system capacity greater than the first system

capacity; said first plurality of satellites providing a first system capacity; (see col. 3, lines 10-14 and lines 34-44). Horkin are silent to disclose said satellites generating a plurality of beams with variable beamwidth to obtain a substantially uniform cell size covering said service area. However, Barmat discloses a communications system comprising satellites generating a plurality of beams with variable beamwidth to obtain a substantially uniform cell size covering said service area (see col. 4, lines 19-25). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Barmat to Horkin in order to avoid interference and allow for a reduction in satellite transponder requirements per unit of bandwidth employed.

Regarding claim 13, Horkin disclose a communications system modified by Barmat comprising all of the limitations as claimed. Barmat also discloses that the uniform cells are substantially fixed within the service area (see fig. 2; col. 4, lines 54-67). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Barmat to Horkin in order to provide service to all the service area.

Regarding claim 17, Horkin disclose a communications system modified by Barmat comprising all of the limitations as claimed. Barmat also discloses the plurality of satellites comprising a phase array to form said plurality of beams (see col. 4, lines 19-25). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Barmat to Horkin in order to avoid interference and allow for a reduction in satellite transponder requirements per unit of bandwidth employed.

Regarding claims 19 and 20, Horkin disclose a communications system modified by Barmat comprising all of the limitations as claimed. Barmat also discloses that the plurality

comprises less than 9 satellites; and the plurality comprises 4 satellites (see col. 10, lines 10-12). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Barmat to Horkin in order to provide continuous coverage to the service area.

12. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Horkin et al (US Patent Number 5619211) in view of Barmat (US Patent Number 4689625) in view of Sarraf et al. (US Patent Number 6175719).

Regarding claim 14, Horkin disclose a communications system modified by Barmat and Bradley comprising all of the limitations as claimed. They are silent to disclose the plurality of beams providing equal capacity density to the cell size. However, Sarraf disclose the plurality of beams providing equal capacity density to the cell size (see col. 1, lines 26-31). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Sarraf to Barmat and Horkin in order to accommodate design simplification and cost reductions as well as changes in user demand and market needs.

13. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Horkin et al (US Patent Number 5619211) in view of Barmat (US Patent Number 4689625) further in view of Horstein et al. (US Patent Number 5867783).

Regarding claim 15, Horkin disclose a communications system modified by Barmat and Bradley comprising all of the limitations as claimed. They are silent to disclose the minimum elevation angle is greater than 10 degrees in the service area. However, Horstein disclose the minimum elevation angle is greater than 10 degrees in the service area (see col. 2, lines 30-32).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Horstein to Barmat and Horkin so that a constellation of satellites provides complete global coverage of the earth.

14. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Horkin et al (US Patent Number 5619211) in view of Barmat (US Patent Number 4689625) further in view of Cellier (US Patent Number 6327523).

Regarding claim 16, Horkin disclose a communications system modified by Barmat and Bradley comprising all of the limitations as claimed. They are silent to disclose a primary market area having an elevation greater than thirty degrees. However, Cellier discloses a primary market area having an elevation greater than thirty degrees (see col. 7, lines 1-5; col. 8, lines 7-9). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Cellier to Barmat and Horkin so that satellite service may be more efficiently realized

15. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Horkin et al (US Patent Number 5619211) in view of Barmat (US Patent Number 4689625) further in view of Schloemer (US Patent Number RE37140).

Regarding claim 18, Horkin disclose a communications system modified by Barmat and Bradley comprising all of the limitations as claimed. They are silent to disclose the satellites are disabled when coextensive with a geostationary orbit. However, Schloemer discloses the satellites are disabled when coextensive with a geostationary orbit (see col. 2, lines 45-50). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention

was made to modify the above teaching of Schloemer to Barmat and Horkin in order to keep satellites in their proper orbits.

16. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Horkin et al (US Patent Number 5619211) in view of Barmat (US Patent Number 4689625) further in view of Castiel et al. (US Patent Number 6263188).

Regarding claim 21, Horkin disclose a communications system modified by Barmat and Bradley comprising all of the limitations as claimed. They are silent to disclose the plurality comprising 5 satellites. However, Castiel et al. (US Patent Number 6263188) disclose the plurality comprising 5 satellites (see col. 13, lines 8-9). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Castiel et al. (US Patent Number 6263188) to Barmat and Horkin in order to provide continuous coverage to the service area.

17. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Horkin et al (US Patent Number 5619211) in view of Barmat (US Patent Number 4689625) further in view of Cellier (US Patent Number 6327523).

Regarding claim 23, Horkin disclose a communications system modified by Barmat comprising all of the limitations as claimed. They are silent to disclose that the satellite orbits are inclined eccentric sub-geosynchronous orbit. However, Cellier discloses that the satellite orbits are inclined eccentric sub-geosynchronous orbit (see col. 2, lines 10-14). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Cellier to Barmat and Horkin in order to provide low cost satellite service particularly suitable for consumer markets.

18. Claims 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dreischer et al. (US Patent Number 6219617) in view of Diekelman et al. (US Patent Number 5867783).

Regarding claim 25, Dreischer discloses a method of developing customized satellite constellation comprising the steps of developing a first satellite constellation having a first set of satellites having regional coverage having a first service area; launching a second set of satellites to form a second satellite constellation in cooperation with said first set of satellites to have a second service area greater than said first service area (see col. 3, lines 10-18). Dreischer is silent to disclose said service area is a primary market area. However, Diekelman disclose within said service area is a primary market area (see col. 1, lines 57-65). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Diekelman to Dreischer in order to provide service to the market area

Regarding claims 26 and 27, Dreischer also discloses launching a third set of satellites to form a third satellite constellation having optimized landmass coverage in cooperation with said first set of satellites and said second; the first constellation, the second constellation and the third constellation comprise SGSO satellites (see abstract; col. 3, lines 10-19).

19. Claims 28-29 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dreischer et al. (US Patent Number 6219617) in view of Diekelman et al. (US Patent Number 5867783) further in view of Caille et al. (US Patent Number 6229500).

Regarding claims 28-29 and 31, Dreischer discloses a method of developing customized satellite constellation modified by Diekelman comprising all of the limitations as claimed. They are silent to disclose the first and second set of satellites are non-interfering with GSO satellites;

the first plurality of satellites and the second set of satellites have active arcs sized to be non-interfering with GSO satellites. However, Caille disclose disclose the first and second set of satellites are non-interfering with GSO satellites; the first plurality of satellites and the second set of satellites have active arcs sized to be non-interfering with GSO satellites (see col. 6, lines 29-34). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Caille to Diekelman and Dreischer in order to avoid interference in the system.

20. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dreischer et al. (US Patent Number 6219617) in view of Diekelman et al. (US Patent Number 5867783) further in view of Cellier (US Patent Number 6327523).

Regarding claim 30, Dreischer discloses a method of developing customized satellite constellation modified by Diekelman comprising all of the limitations as claimed. They are silent to disclose the first plurality of satellites and the second set of satellites have active arcs sized to provide continuous coverage to said second service area. However, Cellier discloses the first plurality of satellites and the second set of satellites have active arcs sized to provide continuous coverage to said second service area (see abstract). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Cellier to Diekelman and Dreischer in order to provide service continuously to the service area.

Conclusion

21. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Nguyen Q. David whose telephone number is (703) 605-4254. The examiner can be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on (703)308-6739. The fax numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for all communications.

DN

David Q. Nguyen

Nguyen Vo
9/5/02

NGUYEN T. VO
PRIMARY EXAMINER